

Attorney's Docket No. K&A 23-0062
Client's Docket No. 14662

APPLICATION

FOR UNITED STATES LETTERS PATENT

SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN THAT I, **ANDOR B. BIRO**, a citizen of HUNGARY, have invented a new and useful **ENGINE SEAL INSTALLING TOOL** of which the following is a specification:

ENGINE SEAL INSTALLING TOOL

BACKGROUND OF THE INVENTION

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Field of the Invention

The present invention relates to seal installing tools and more particularly pertains to a new engine seal installing tool for 10 facilitating installation of engine seals in a simplified two step process.

Description of the Prior Art

15 The use of seal installing tools is known in the prior art. U.S. Patent No. 2,621,398 and U.S. Patent No. 3,490,131 each disclose a device and method for installing an oil seal. U.S. Patent No. 5,539,979 discloses a method and apparatus for repairing the rear seal area on the crankshaft of an internal combustion engine that 20 uses a plurality of tool inserts.

While these devices fulfill their respective, particular objectives and requirements, the need remains for a device that more easily and efficiently installs a seal.

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SUMMARY OF THE INVENTION

The present invention meets the needs presented above by providing a simple mechanical process to insert an engine seal into 30 an engine.

An object of the present invention is to provide a new engine seal installing tool that self aligns the new engine seal with the seal housing.

5 Another object of the present invention is to provide a new engine seal installing tool that quickly inserts a new engine seal into the seal housing.

To this end, the present invention generally comprises a main 10 screw portion attachable to the crankshaft or camshaft. A pressure nut is attached to the main screw and is used to urge a seal guide and seal mount along the main screw towards the seal housing until the seal is positioned in the seal housing. The seal remains in the seal housing upon withdrawal of the seal mount and the main screw 15 is detached from the crankshaft or camshaft.

There has thus been outlined, rather broadly, the more 20 important features of the invention in order that the detailed description thereof that follows may be better understood, and in order that the present contribution to the art may be better appreciated. There are additional features of the invention that will be described hereinafter and which will form the subject matter of the claims appended hereto.

25 The objects of the invention, along with the various features of novelty which characterize the invention, are pointed out with particularity in the claims annexed to and forming a part of this disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be better understood and objects other than those set forth above will become apparent when consideration is 5 given to the following detailed description thereof. Such description makes reference to the annexed drawings wherein:

Figure 1 is a partial cross-section side view of a new engine seal installing tool according to the present invention.

10 Figure 2 is a side view of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

15 With reference now to the drawings, and in particular to Figures 1 and 2 thereof, a new engine seal installing tool embodying the principles and concepts of the present invention and generally designated by the reference numeral 10 will be described.

20 As best illustrated in Figures 1 and 2, the engine seal installing tool 10 for inserting an engine seal 2 into a seal housing 4 surrounding an engine shaft 6 generally comprises a main screw 20 having a distal end 22 designed for attachment to the engine shaft 6. A pressure nut 24 is attached to the main screw 20 and 25 selectively movable along a length of the main screw 20 between a head portion 26 and the distal end 22. A seal guide assembly 30 is slidably inserted onto the main screw 20. The seal guide assembly 30 has a seal mount portion 32. The seal mount portion 32 is insertable through the engine seal 2 such that the engine seal 2 is 30 mounted on the seal mount portion 32. The pressure nut 24 is movable against the seal guide assembly 30 to urge the seal guide

assembly 30 towards the distal end 22. Thus, the engine seal 2 is delivered into the seal housing 4.

To facilitate operation, a washer 34 constructed of brass or 5 copper is positioned between the pressure nut 24 and the seal guide assembly 30. The washer 34 may have a beveled circumferential edge surface

The seal guide assembly 30 has a backing portion 36. The 10 seal mount portion 32 is a cylindrical tube extending from the backing portion. The backing portion 36 has a diameter that is greater than a diameter of the seal mount portion 32, and also greater than a diameter or dimension of the cavity in the seal housing 4. Thus, the seal mount portion 32 is positionable to 15 receive an end 8 of the engine shaft 6 such that the engine seal 2 is positioned in the seal housing 4. The seal mount portion 32 extends from the backing portion 36 a length less than a depth of the engine seal 2. Thus, the seal mount portion 32 is inhibited from abutting a back wall 9 of the seal housing 4 while inserting 20 the engine seal 2 into the seal housing 4.

The backing portion 36 includes a groove 38 extending around a base 40 of the seal mount portion 32 such that the groove 38 is positioned to receive a protrusion 3 extending from the engine seal 25 2.

The main screw 20 includes threading complimentary to interior threading 7 of the engine shaft 6 whereby the main screw 30 is attachable to the engine shaft 6.

The method of use includes the following steps. The user requires an engine having an engine shaft and a seal housing

surrounding an end of the engine shaft, an engine seal, and a seal installing tool as described above. The engine seal is mounted onto the seal mount portion. The main screw is attached to the engine shaft. The pressure nut is moved towards the engine shaft whereby 5 the seal guide assembly is urged towards the engine to insert the engine seal into the seal housing. The seal guide assembly is retracted away from the engine and the engine seal is retained in the seal housing. The main screw is detached from the engine shaft.

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It is preferable to move the pressure nut towards the head portion of the main screw to permit retraction of the seal guide assembly while the main screw remains attached to the engine shaft.

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It is also preferable to move the pressure nut towards the engine shaft until the backing portion abuts the engine to indicate the engine seal is fully inserted into the seal housing.

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With respect to the above description then, it is to be realized that the optimum dimensional relationships for the parts of the invention, to include variations in size, materials, shape, form, function and manner of operation, assembly and use, are deemed readily apparent and obvious to one skilled in the art, and all equivalent relationships to those illustrated in the drawings and 25 described in the specification are intended to be encompassed by the present invention.

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Therefore, the foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable

modifications and equivalents may be resorted to, falling within the scope of the invention.